THE NATURE CONSERVANCY NEWS

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SPECIAL ISSUE:
YEAR IN REVIEW 1974

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THE NATURE CONSERVANCY NEWS

Published Quarterly by The Nature Conservancy
1800 North Kent Street
Arlington, Virginia 22209
SUE DODGE, EDITOR

Volume 25, Number 2 **Spring 1975**

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COVER PHOTO: Capped Mycena, by Michael P. Gadomski.
INSIDE COVER PHOTO: Bracken ferns, by Barbara Dodge.

LAND CONSERVATION THROUGH PRIVATE ACTION

The Nature Conservancy is a national conservation organization, receiving its support from the public, whose resources are devoted to the preservation of ecologically and environmentally significant land. Some 744,592 acres of forests, swamps, marshes, prairies, mountains, beaches, and islands in 1,357 projects throughout the United States, have been saved from destruction by the Conservancy since the acquisition of its first preserve in 1954.

The Nature Conservancy works in three ways to protect threatened natural areas: by purchase of land with funds raised through public subscription, by acceptance of donations of land, and by advance acquisition of land for local, state, and federal governments.

A member-governed non-profit organization, The Nature Conservancy was incorporated in 1951 in the District of Columbia for scientific and educational purposes.

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NEW PROJECTS

California

PYGMY FOREST — Addition — (Mendocino County). Acquired in a cooperative effort with the State of California, the 2-acre tract includes Douglas fir, Sitka spruce, and the dwarfed Gowen cypress and coastal lodgepole variety of pines that make up the famous pygmy forest. The area is to be included in Jug Handle Creek State Park.

Idaho

TWO MOUTH LAKE (Boundary County). The undisturbed sub-alpine area includes coniferous forest, numerous wildflowers, and two connecting lakes totaling about twenty acres. Acquired on behalf of the U.S. Forest Service, the 160-acre area will be included in the Selkirk Management Area to be used for primitive recreation only.

Maine

BIDDEFORD POOL (York County). A two-fifths interest in 12 acres of rocky Atlantic shoreline is a gift of Edmund W. Kittredge. Outcroppings along the shore are interspersed with several narrow gravel beaches. Recognized as part of the most pristine section of shoreline in southern Maine, the area provides a resting place for migratory arctic birds. The property will be transferred to Maine Audubon Society for management.

Michigan

GRASS RIVER PRESERVE—Addition—(Antrim County). 6.4 acres serve as buffer to Grass River Preserve which now totals 144 acres. Management of the property, which is a gift of Dr. Alfred Austin, is the responsibility of the Grass River Project Committee.

GRAYLING WILDERNESS—Addition—(Crawford County). The Conservancy is named as a reverter interest in a donation of 174 acres from Dorothy Knight to Trout Unlimited. The property consists of white cedar swamp and second-growth jack pine forest, as well as approximately two miles of frontage on the AuSable River, considered to be the best trout stream in the eastern United States. The Grayling Wilderness area is on the southern edge of the endangered Kirtland warbler's restricted breeding range.

Minnesota

DIAMOND POINT (Itasca County). Situated directly across Wabena Lake from the Joyce Estate (a 1973 Conservancy project), the 69-acre preserve consists of second-growth northern hardwood forest and 6,700 feet of shoreline on the Lake. The property is scheduled for transfer to the U.S. Forest Service for addition to Chippewa National Forest.

LAIBLE WOODS (McLeod County). The 40-acre undisturbed tract is forested in American elm, basswood, oak and butternut hickory, and lies within the area where the southwest prairies meet the forest lands of the northeast. The dynamics of this ecotone make it one of the most interesting areas for scientific study in the state. Fundraising for the purchase and management of the area are the responsibilities of the Minnesota Chapter.

Missouri

MYERS PRAIRIE—Project '76—(Barton County). Two tracts totaling 240 acres provide refuge for two rare species—the greater prairie chicken and the upland plover. Purchased with funds provided by Miss Katharine Ordway, the area harbors a good diversity of prairie sites ranging from dry upland sites to much wetter sloughgrass swales. The tall grass prairie is leased to and managed by the Missouri Department of Conservation.

New York

ACCABONAC HARBOR—Additions—(Suffolk County). Two tracts totaling ¾ acre, donated by Mrs. Lenore Pollock and Mr. Michael C. Paylo, consist of typical New England salt marsh on Accabonac Harbor. A variety of shorebirds and waterfowl frequent the area. The South Fork-Shelter Island Chapter has management responsibility.

MECOX DUNES—Miller Property—(Suffolk County). The 2.4-acre tract of typical barrier dunes and Atlantic beach is the first acquisition in a proposed assemblage project. A gift of Edith Breese Roberts, Lawrence McK. Miller, Jr., and G. Macculloch Miller II, the area will be managed by the South Fork-Shelter Island Chapter.

Ohio

ABNER HOLLOW PRESERVE (Adams County). The area contains steep gorges through the Peebles Dolomite and Ohio Black Shale formations, and controls the lower two-thirds of a small watershed. Most of the property is woodland which varies from mixed hardwoods to mixed mesophytic to beech-maple, interspersed with a number of small springs and prairie openings. The 218-acre area, part of an overall plan to link together the Conservancy's Adams County preserves, is to be transferred to the Cincinnati Museum of Natural History for management.

CHARLESTON FALLS (Miami County). 169 acres include a 30-40 foot waterfall and a deep, wooded gorge. The property was purchased by the Conservancy on behalf of the Miami County Park District using a favorable and innovative loan provided by the George Gund Foundation. The tract, the county's number one priority area, is scheduled for transfer to the Park District for inclusion in the county system of open space and parkland.

STRANAHAN ESTATE (Lucas County). Purchased at the request of the Metropolitan Park District of the Toledo area, the 464-acre tract, valued in excess of $4 million, is largely wooded in the north with stands of red and white oak; to the south the land has meadows interlaced with forest areas. A stream traverses the tract and large ravines—in sharp contrast to the surrounding flat terrain—are created by its tributaries. Owls and hawks find refuge in the estate's wooded areas. The property is leased to the Park District until transfer occurs later this year.

SOUTHEAST PARK—Pape Addition—(Hamilton County). In cooperation with the Hamilton County Park District, the Conservancy purchased 5 acres of typical second-growth eastern mixed hardwood forest. The area will be transferred to the Park District for inclusion in a proposed 2,200-acre park.

Oregon

SOUTH SLOUGH ESTUARY: VALINO ISLAND (Coos County). The relatively pristine estuary, extending south from Coos Bay, is edged with acres of salt marsh, eel grass and mud flats. Three active river otter dens are located in the estuary, and Coho salmon and steelhead trout are abundant. A great number and variety of shorebirds and waterfowl frequent the area. The 23-acre tract is scheduled for transfer to the state of Oregon.

Texas

MARYSEE PRAIRIE—Addition—(Liberty County). 3½ acres of tallgrass prairie are situated in the heart of the Big Thicket. A joint fundraising effort for the purchase of the tract is underway by the Texas Chapter and the Big Thicket Association. The prairie, which is to be managed by a local committee, now totals 7 acres.

Dominica, West Indies

ARCHBOLD PRESERVE (Dominica). Acquisition of 950 acres of tropical rain forest, a gift of Mr. John D. Archbold, marks the beginning of the Conservancy's International Program. See article beginning on page 8.

Gallant Ghost of Four Holes Swamp

Frances Marion, the "Swamp Fox"

First in a series

By Anne Ilka Webb

Ghoulish mists hang suspended above the black mirror of the water's surface . . .
Masses of dark, thick-trunked cypress rise ominously and fade skyward . . .
Whole forests of gnarled cypress knees rise from the water like denizens of eerie twilight tales . . .
A big bull alligator grunts explosively; a turtle slips slap-splash off a log . . .
Wood ducks descend on cupped wings through the high dense canopy and the still green light . . .
An undulating white blanket of ibis feed on crayfish delicacies . . .
Ferns stand everywhere in riotous profusion . . .
The scent of pale Easter lilies and of a dozen other frail and damp vapors waft through tree-columned chambers and glistening corridors . . .

These are some of the sights, sounds and smells of Four Holes Swamp, South Carolina. They remain today, in this the largest and last surviving stand of virgin blackwater cypress, much as they were more than two centuries ago when the swamp was already of a venerable age, but most men's and women's acquaintance with it was young.

It is easy to understand why a colonial would have been a bit hesitant and uncertain traveling through this forest, on foot or by horse, trying to find one of the four passes—or four holes—through the swamp. No one knows whether it was these passes, or four springs, or four deep places in the watercourse, that gave the swamp its name in America's early settlement days.

There were Indians living in the swamp in those days—an exiled population of Natchez, the remnant of a once flourishing mound-building culture which numbered only 4,500 at the first European contact in the 17th century.

Following their defeat in 1729 in a war with the French and Choctaw, the Natchez fled the Mississippi valley, with fragment groups eventually

reaching South Carolina, the largest settling at Four Holes.

In 1738, the colonial governor recommended the band be taken under the protection of the province and be given 100 acres of "good Corn Land" near the swamp for their use. These same Indians were subsequently encouraged to scout parts of eastern Carolina for the colony.

In 1744, a message from the "King of the Notchee" to the governor offered the services of the men of the tribe to assist "in case of any Insurrection or Rebellion of the Negroes."

After an incident that same year near Four Holes involving the murder of nine Choctaw by other Indians who were associated with the Natchez, the Natchez band was forced to flee the area out of fear of revenge. While the governor intervened to save the Natchez, the ultimate fate of the refugee tribe after that is unknown. Individual Natchez were probably absorbed by other low country tribes.

Nearly all the "Red Carolinians" of colonial days have just about vanished from memory, and the ghosts of soldiers and heroes of a republic being born now dominate our history. Perhaps the most famous of all the native sons of South Carolina who fought in the Revolutionary War is Frances Marion, nicknamed the "Swamp Fox."

Marion was born and raised near Four Holes and knew well the vast cypress-tupelo forests that bordered the fresh water rivers in those days. When Charleston fell to the British in 1780, and with it the whole main Revolutionary army in the South, Marion slipped away to the swamp, carrying out orders to burn boats and harass the enemy.

He trained a band of guerrillas to ride and fight while living off the land. These men often defeated larger bodies of troops by surprise and rapidity of movement through the swamps. Considering what a splendid place for playing hide-and-seek Four Holes is, it is understandable why the dreaded British Colonel Tarleton, whose troops were considerably worn down by months of chasing Marion, should say of him, "As for this damned old fox, the devil himself could not catch him."

When the regular American army under General Nathaniel Greene arrived in the South in late 1780, Marion cooperated with operations along the coast. Marion's men together with the legion of Lieutenant Colonel Henry (Light Horse Harry) Lee captured British held Fort Watson and Fort Motte, both near Four Holes.

As a successful leader and strategist of a "partisan campaign" as guerrilla warfare was then called, the "Swamp Fox" participated in a unique phase of American military history. By combining the actions of partisan raiders with the maneuvers of a field army otherwise too weak to accomplish much, Marion helped create a deadly force that did much to break the British hold of the South and hasten the end of the war.

Those early years of American history as they touch Four Holes are, of course, but the briefest moments in the swamp's much vaster natural history. Thousands upon thousands of years passed as the system containing Four Holes Swamp was formed. Plants and animals were alive and active in the morning fogs of antiquity that are now treasured fossils or the composing elements of sedimentary rocks.

Four Holes was not the only blackwater cypress swamp created, but it is probably the last one that will ever survive in its pristine state. While the trees here grew strong, other cypress in other swamps fell to the axe, their fine soft wood, which lasts nearly forever, doomed to lie as shingles on countless southern farmhouse roofs, to stand as walls of barns, to float as canoes, or simply to sink to stream bottom where their final measure of resistance was to fossilize rather than rot.

Ivory-billed woodpeckers once found refuge in Four Holes.

AFTER GOD THE EARTH

Rain Forest Preserved in Dominica, West Indies

by R. Michael Wright
Director, International Program

Midway in the 1,000-mile chain of islands stretching from the Virgin Islands south to Trinidad, Dominica is known as the "nature island of the Caribbean." Precipitous peaks, bathed in over 300 inches of rain per year, plunge steeply to cliffs, black sand and cobbled beaches. Torrential rivers, sparkling streams and waterfalls, deep valleys, tall trees and lush vegetation characterize the island. Dominica's large expanse of undisturbed flora is the last remaining in the Lesser Antilles.

A 950-acre tract of pristine tropical rain forest on Dominica was recently donated to The Nature Conservancy. Middleham Estate, a gift of John D. Archbold of Virginia, is valued at more than $1 million and is the first project in the Conservancy's new International Program.

The inscription "Apres Bondie C'est La Ter" (After God, the Earth) on Dominica's coat of arms symbolizes the unique relationship of these West Indian people with their natural environment. Above the inscription a shield, with a *crapaud* (a large wood frog known locally as "mountain chicken") in the upper right quadrant, is supported by two sisserou, one of two endangered species of parrot found only on Dominica. The rugged 289-square-mile island is also inhabited by small opossum, five-foot iguanas, the *agouti* (a rabbit-sized rodent), boa constrictors, and three dozen species of bats. The last tribe of the once-cannibal Carib Indians, whose former dominance of the archipelago gave the sea its name, lives on a reservation in the north of Dominica.

Sighted and given its present name on November 3, 1493, by Columbus during his second voyage, Dominica was initially considered Spanish, then left to the aggressive Caribs under the Treaty of Aix-la-Chapelle in 1748. However, the French and English quickly violated the agreement and fought for possession of the island, with Britain finally dominating in 1805. Dominica remained a British colony until March 1, 1967, when it achieved self-government as a State in Association with Britain. Dominica's wildlife, generally nocturnal and shy, reflects the isolated island environment. Besides the *crapaud* (*Leptodactylus fallax*) and the two parrots—the sisserou (*Amazona imperialis*) and red-necked (*Amazona arausiaca*)—the blue-headed hummingbird (*Cyanophaia bicolor*), and two species each of snakes, lizards and bats are endemic to Dominica. The island's 135 species of native birds include the trembler (*Cinclocerthis ruficauda*), a thrush whose courtship and territorial display involves a rapid, quivering movement.

Middleham Estate, now to be known as the Archbold Preserve, demonstrates the botanical richness of Dominica. The land is dominated by trees rising from broad buttresses to over 100 feet. Branches jutting out 50 feet above the dark forest floor are festooned with cable-like lianas. These vines—some eight inches across and hundreds of feet long—are capable of supporting upright huge trees which have broken off at their base. Epiphytes—plants which live off the moist atmosphere—cover trees, branches and vines, providing aerial habitat for insects and amphibians.

As little as ten percent of the bright tropical sunlight penetrates the thick canopy of tree tops, leaving the forest floor open and relatively free of vegetation. But, in the shadows, the relentless search for space and sun is dramatically demonstrated by the strangler fig. Beginning its life as an epiphyte in a sunlit tree top, the fig gradually puts out feeder roots toward the soil and its nutrients. Ultimately, encased by the now-hardened feeder roots, the host tree is strangled, rots, and is replaced by the fig in the forest canopy.

The most common trees of the preserve are the giant red-buttressed *Chataignier* (*Sloanea berterni-*

The sisserou, or imperial parrot, is one of two endangered species of parrot found only on Dominica.

ana, S. caribaea and *S. truncata*) found in association with the unbuttressed pillar-like *Gommier* (*Dacryodes excelsa*) amid a scattering of other species such as the aerial prop-rooted Mangle blanc (*Symphonia globulifera*). In contrast to North American forests which are dominated by only a few species, the diverse forest of Dominica contains as many as 60 different tree species within a 10-acre plot. According to researchers, "Nowhere in the American tropics can a better display of the luxuriant rain forest be seen than in the interior of Dominica."

The factors which make the tropical forest a system of high biological productivity—the complexity of biological relationships, the number of species, and the high rainfall—also make the system vulnerable to damage when man intervenes. In a pristine rain forest, nutrients are quickly absorbed into the living system, leaving a fragile soil which can be impoverished when exposed to driving rains and blistering sun. The removal of the lush tropical vegetation can quickly produce a soil which is astonishing in its lack of fertility.

The tropical rain forest represents the oldest and richest collection of vegetation on earth and contains the ancestors of virtually every modern plant and tree, including the desert cactus. The Archbold gift will help preserve this unparalleled genetic reservoir and will allow the centuries-old evolutionary process to continue.

An active international conservationist, Mr. Archbold has for many decades been committed to the preservation of Dominica's unique natural values. Under his patronage, the first studies of the life cycle of the *crapaud* were initiated. Mr. Archbold is also the joint sponsor of the Bredin-Archbold-Smithsonian Biological Survey of Dominica in which 55 scientists from the Smithsonian Institution, the U.S. Department of Agriculture, and twenty other institutions have participated. The results of this extraordinary effort were described by two participants: "Up to the end of 1974, sixty papers comprising a total of 1,300 pages have been published reporting on the results of the survey. More than 170 previously undescribed species of organisms, many of them found nowhere else than on the island, have been described, many others recorded, and much of their life histories and habits observed. Much additional work is in progress, some of which will soon appear in print, and much more will be done in the course of many years to come. . . . The work already done has shown that the survey will rank as an outstanding accomplishment in making known to science the animals and plants of the islands of the Lesser Antilles and possibly of any Caribbean island."

The commitment to preserve the island's unique natural heritage has led to proposals, presently under consideration by the Dominican government, to establish a national park on approximately 16,000 acres adjacent to the Archbold Preserve. The proposed park would encompass a spectacular array of natural features. Its four forest types include rain forest, elfin woodland (cloud forests constantly bathed in mist), montane thicket and palm brake. The park would also contain mountains ranging from 3,683 to 4,400 feet, and three strikingly different lakes: Freshwater Lake, Boeri (Crater) Lake, and one of the world's largest boiling lakes. Awesome Titou Gorge is a mile long, 100 feet deep, and barely five feet wide in places. The barren Valley of Desolation is a testament to the island's volcanic origins, with its sulfur springs, steam-belching fumaroles, and streams of black, white, red, gray and orange water.

The park, covering over 9% of the island, represents an extraordinary commitment of a young government to preserve the primary natural re-

The crapaud, *a large wood frog known locally as "mountain chicken".*

sources which directly affect the physical well-being of its people. Besides preserving the island's ecological balance and protecting a natural tourist attraction unmatched in the Caribbean, the park and its undisturbed watershed assure pure drinking water for the capital city, and provide potential hydroelectric power. The park will also safeguard against the dangers of flooding and erosion, and provide a baseline—a picture of how a healthy natural system maintains itself—to be compared with areas disturbed by logging or agriculture. An environmental education program is being planned throughout Dominica, and the Conservancy has leased the Archbold Preserve to the Dominican government for management as a part of the park and education program.

The park idea has gained regional and international attention since first proposed in the early sixties. The Caribbean Conservation Association, based in Barbados, has worked actively on the proposal from its inception, and the Canadian Nature Federation has been assisting with planning over the past year. Prior to that time, the Conservation Foundation spent five years on the concept. The International Union for the Conservation of Nature (IUCN), the U.N.'s Food and Agriculture Organization, and the Smithsonian Institution have all studied specific aspects of the island, and the World Wildlife Fund is currently undertaking a study of the island's endangered

Cable-like lianas are capable of supporting upright huge trees which have broken off at their base.

parrots. A number of Dominicans, through both governmental and individual efforts, have worked untiringly for many years toward the establishment of the park which now appears to be coming to fruition. The park is a yardstick by which Dominica's dedication to the environment will be measured for years to come.

Supported in its initial year by the World Wildlife Fund and a Rockefeller Foundation Fellowship, the Conservancy's International Program is aimed at preserving natural areas outside the U.S. through joint projects, model acquisitions and use of Conservancy-developed techniques. The goal of the program is to assist citizens of other nations to create natural area preserve systems.

1974: Year in Review

Each spring, a review of the projects of the past year is published in order to inform members and friends of the Conservancy's activities and to seek support for the General Fund.

During 1974 The Nature Conservancy, its members and supporters completed 210 projects comprising 304,829 acres of natural land. This accomplishment represents the conviction and dedication of many individuals—the generous and foresighted persons who donated land, those who so willingly gave funds to make purchases of land possible, and those chapter and committee members who volunteered their time and energies to make the Conservancy's programs work.

The pages that follow contain a portfolio of the Conservancy's achievements for one year. Each project is a success for the Conservancy; but much more needs to be done, and can be done, so that more land and the life it shelters can be protected.

The coming year presents many new opportunities and offers fresh challenges. With your continued help and support, the Conservancy can continue to help preserve and protect the nation's wild lands.

Arkansas

CAMP LOGOLY, Columbia Co. Numerous mineral springs and spring-fed lake surrounded by virgin pine and mature oaks. To be conveyed to Arkansas Parks Department for use in environmental education. 280 acres.

California

DEATH VALLEY: FLAPJACK AND KET LODES, Inyo Co. 27-acre purchase on behalf of the National Park Service nearly completes land acquisition goals for Death Valley National Monument.

FAIRFIELD-OSBORN SANCTUARY, Addition, Sonoma Co. (Gift of Mr. and Mrs. William M. Roth). Two tracts totaling 67 acres expand preserve to 98 acres. Two ponds, spring-fed stream, mature California live oak and California laurel.

LILLIAN DEVENDORF HOHFELD NATURE RESERVE, Addition, Monterey Co. 163 acres are part of the last undisturbed marine lagoon between San Francisco and Morro Bay. Refuge for California clapper rail and California least tern, both endangered species. Undivided one-half interest donated by Alice M. Buck; remaining interest purchased by Lillian Devendorf Hohfeld Project Committee.

KNAPP SOUTH BAY SALT MARSH, San Francisco Bay Project, Santa Clara Co. (Gift of Mr. J. Gordon Knapp and Mr. William Knapp). Additional undivided interest in 457-acre marshland. Resting and feeding place for waterfowl, shorebirds, harbor seals.

LAKE TAHOE (CLINE TRACT), El Dorado Co. (Gift of Messrs. John H. Cline, Jr., James W. Agee and J. Austin Zerkle). 7 acres contain steep, boulder-strewn forest of Jeffrey pine; within scenic Lake Tahoe Basin. To be conveyed to U.S. Forest Service.

LANPHERE/CHRISTENSEN DUNES, Humboldt Co. Undisturbed coastal sand dunes, beach pine forest; bordered on west by Pacific Ocean and on east by Mad River Slough. 47-acre purchase is managed by Western Regional Office with assistance of California State University at Humboldt.*

LAS CRUCES EASEMENT, Addition, Santa Barbara Co. (Conservation easement donated by Jonathan and Nancy Kittle). 500 acres near Graviota State Park include headwaters and watershed of Las Cruces Creek, coastal grasslands, and steep slopes covered with chaparral-oak woodland.

MARTINEZ CANYON, Riverside Co. Steep desert canyons rising to 6,000 feet in elevation; habitat for desert bighorn sheep. Scheduled for transfer to California Wildlife Conservation Board. 650 acres.

MILL VALLEY COMMUNITY CHURCH PROPERTY, Marin Co. Scenic grassy knoll overlooking Mill Valley; 22 acres to be conveyed to City of Mill Valley.

Colorado

BODO PRESERVE, La Plata Co. See page 14.

CHAMBERS' PEACEFUL VALLEY, Jefferson Co. (Gift of Donald and Dorothy Chambers). 12 acres include narrow strip along Walnut Creek and adjacent ridge. Colorado Chapter is responsible for management.

HOLZWARTH RANCH, Grand Co. 634-acre key addition to Rocky Mountain National Park; includes two miles of Colorado River's headwaters, spruce-pine forest. Purchased with special financing provided by First National Bank of Denver.

Connecticut

BANTAM RIVER, Addition, Litchfield Co. (Conservation easement donated by Mr. Andrew Gagarin). 17-acre floodplain on West Branch of river. Open wet meadows provide habitat for waterfowl and active beaver colony. One of a series of easements granted to the Conservancy along Bantam River; protected river frontage now totals 9.4 miles.

BYRAM RIVER GORGE, Addition, Fairfield Co. (Gift of Mr. Calvin Duke). 6 acres along entrance to Wooley Pond, through which Byram River flows. Pond provides habitat for salamanders and small fish in shallow end, and for bass and trout in deep end. Managed by Byram River Gorge Caretaker Committee.

CHURCH HILL PRESERVE, Litchfield Co. 23-acre purchase by Connecticut Chapter includes 9-

Greenland Gap

Greenland Gap is a dramatic geologic structure in central Grant County, West Virginia. Cut by Patterson Creek through 800 feet of rock, the gap is rimmed by massive cliffs of pink and white Tuscarora quartzite. The creek's fast-moving headwater stream flashes through rapids and drops over falls as it runs its three-mile course through the scenic gap. Rich in history, the area was once explored by George Washington, and was the site of a Civil War encounter. The 255-acre area is a gift of Greenland Lodge, Inc., in memory of Mr. and Mrs. David A. Burt, whose interest in the gap in the 1920's and later acquisition of lands surrounding it helped assure the retention of the area's natural integrity.

Bodo Preserve

In cooperation with the Colorado Division of Wildlife, the Conservancy purchased the 7,100-acre Bodo ranch, located just southwest of Durango. The property, between 6,700 and 7,700 feet in elevation, forms a broad basin covered primarily with pinion pine, juniper and scrub oak. Because of the area's vegetation, predominant southern exposure and its proximity to other state and federal holdings, the Colorado Division of Wildlife has long regarded the property as the most desirable winter range for deer and elk in the state.

acre marsh, wooded upland. Transferred to Steep Rock Association.

JOHN B. CURRIE SANCTUARY, Litchfield Co. (Gift of Mrs. Bethia S. Currie). Rich woodland with spectacular rock outcroppings; adjacent to Macedonia State Park. Connecticut Chapter will manage the 80-acre area.

DUCK POND HILL, Addition, Fairfield Co. (Gift of Mrs. Audrey S. Hess). Two wooded acres overlooking waterfowl refuge. Enlarges Preserve to 12 acres.

FARM CREEK COMPLEX, Addition, Fairfield Co. (Gift of Mr. and Mrs. Phillip C. Langdon). ½-acre salt marsh with *Spartina*.

GREAT HILL TRACT, New Haven Co. (Gift of Elizabeth A. and Helen H. Livingston). Sandstone ledges, several small marshes; underground stream. The 7-acre property has been transferred to North Branford Land Trust for management.

GRISWOLD POINT, New London Co. (Gift of Dr. Matthew Griswold). One-half interest in 21 acres containing tidal mud flats and barrier beach. Managed by the Connecticut Chapter.

HATCHETT'S POINT, New London Co. (Conservation easement donated by Hatchett's Point Improvement Company). 141-acre headland on coast of Long Island Sound. Oak-hickory forest, tidal marsh and beaches; haven for shorebirds.

IRON MOUNTAIN RESERVATION, Litchfield Co. (Gift of Mr. Annabel G. Irving). Moist deciduous forest; diverse vegetation due to range in elevation. Active hawk nest, nesting Canada geese. 285 acres. Managed by Connecticut Chapter.

LORD'S COVE, Ferry Property, New London Co. (Gift of Mr. and Mrs. Chamberlain Ferry). 21 acres of tidal marsh; part of the finest tidal river marsh complex remaining in the state. Managed by the donors and Connecticut Chapter.

MESSENGER PRESERVE, Hartford Co. (Gift of Mrs. Edna Messenger). Woodland with three streams and two corresponding watersheds. Wildlife on the 144-acre tract includes white-tailed deer, bobcat, black bear, otter, beaver, and mink. Managed by the Connecticut Chapter.

STEPHEN E. NELSON RAVINE, Litchfield Co. (Gift of Mrs. Stephen E. Nelson). 3 acres with wooded ravine and stream. Managed by Connecticut Chapter.

ROCK SPRINGS WILDLIFE REFUGE, Windham Co. (Gift of Mr. David O. Shoemaker). Upland contains oak-hickory-maple forest on rugged, hilly terrain; lowland includes stream, wetlands. Wildlife refuge. Managed by Connecticut Chapter. 332 acres.

STILL POND, Addition, Fairfield Co. (Gift of Ann Shellenberger). 2-acre tract contains woodland and part of unpolluted pond. Preserve now totals 14 acres and includes all of Still Pond. Managed by the Connecticut Chapter.

PATRICIA WINTER WOODLAND, Litchfield Co. (Gift of Mr. Gustavus D. Pope). 170 acres include a ridge forested with oak and hickory, steep rocky slopes; below the ridge are deep pockets of moist soils with mixed hemlock-hardwood forest. Traversed by Appalachian Trail. To be transferred to The Salisbury Association for management.

Florida

DONNELLY PRESERVE, Palm Beach Co. (Gift of Elliott and Ann S. Donnelly). 1 acre of open land with sub-tropical vegetation.

LITTLE PINE ISLAND, Lee Co. (Gift of the estate of Julius Wetstone). 2,537 acres of mangrove swamps and estuary adjacent to Ding Darling National Wildlife Refuge. Habitat for fin and shell fish, as well as many waterfowl species. To be transferred to the state.
—Addition. The State of Florida purchased 1,722 acres with Conservancy assistance.

Georgia

HOFWYL-BROADFIELD PLANTATION, Glynn Co. (Gift of the Ophelia Troup Dent Estate). 1,268 acres contain 760-acre brackish tidal marsh on the Altamaha River, providing habitat for wading birds and migrating waterfowl. Upland portion supports live oak and pine. Transferred to the state for inclusion in State Heritage Trust Program.

Hawaii

KIPAHULU VALLEY, Addition, Maui Co. (Gift of Mr. Samuel Frazier Pryor, Jr.). .15 acre

within proposed boundaries of Kipahulu Valley National Park. To be transferred to the National Park Service.

Illinois

GENSBURG-MARKHAM PRAIRIE, Additions, Cook Co. Illinois Chapter purchased three tracts totaling approximately 1½ acres for addition to tallgrass prairie preserve just south of Chicago. Scheduled for ultimate transfer to Northeastern Illinois University. Preserve now totals 92 acres.*

HART MEMORIAL WOODS, S. Charles Kendeigh Addition, Champaign Co. Sagamon River floodplain and upland forest of oak and maple; 4 acres. Leased to the University of Illinois and managed by the Illinois Chapter and the university.

PRAIRIE GROUSE PRESERVE, Burridge D. Butler Sanctuary, Marion Co. 160-acre addition to system of sanctuaries for the threatened prairie grouse. Purchased by Prairie Grouse Committee of the Illinois Chapter. Managed by Illinois Natural History Survey.

PRAIRIE GROUSE PRESERVE, Loy II Sanctuary, Marion Co. 100 acres provide potential nesting and breeding habitat for greater prairie chicken. Illinois Chapter's Prairie Grouse Committee has now set aside 1,600 acres in 16 separate tracts. Dedicated to Illinois State Nature Preserves System.

Indiana

BARKER WOODS, LaPorte Co. (Gift of estate of Marjory C. Barker and heirs Margery Barker and Wallace N. Barker). 36-acre relict swamp forest dominated by pin oak, black gum, red maple. Managed by Indiana Chapter and dedicated to Indiana Nature Preserve System.

Kansas

ROY AND ELEANOR WALL WOODS, Douglas Co. 32-acre climax woodland with abundance of hazel shrubs and showy orchids. Mr. and Mrs. Roy Wall provided funds for purchase and maintenance of the preserve. Transferred to Kansas University Endowment Association.

Kentucky

MURPHEY'S POND, Additions, Hickman Co. Two additions totaling 77 acres provide buffer and access to 237-acre Conservancy-owned preserve. To be conveyed to Murray State University for management.

Maine

BARRED ISLANDS, Hancock Co. (Conservation easement donated by Mr. and Mrs. Bennett F. Schauffler). 23 acres consist of chain of coastal islands including 13-acre Great Barred Island. Supports variety of bird life.

BEVERIDGE EASEMENT, Knox Co. (Conservation easement donated by Mr. and Mrs. Arnold P. Beveridge). 25-acre wooded island with rugged shoreline; nesting area for eider ducks.

BUTLER PRESERVE, York Co. (Gift of Miss Dorothy J. and Mr. G. Robert Butler). Additional undivided interest in 6 wooded acres fronting Kennebunk River.

DOUGHTY POINT, Cumberland Co. (Gift of Dr. and Mrs. Donald Macomber). One-half undivided interest in 40 acres of productive salt marsh and old-growth mixed forest. Ospreys nest nearby.

KIMBALL ISLAND, Knox Co. (Two conservation easements donated by Mr. and Mrs. Robert H. P. Olney). 40 acres on 500-acre island with rocky shoreline, spruce-fir forest. Ospreys and bald eagles frequent the island and active nesting occurs nearby.

OUTER SCOTT ISLAND, Hancock Co. (Conservation easement donated by Mr. and Mrs. Robert McCloskey). 6-acre rocky island covered with spruce, aspen, alder. Nesting area for eider ducks, herring gulls and great black-backed gulls.

SHEEP ISLAND, Hancock Co. 5-acre island purchased by Maine Chapter features spectacular gorge, unusual geologic history. Managed by the Chapter.

SUCKER BROOK WATERSHED, Sabra's Creeper Hill Preserve, Oxford Co. (Gift of Mr. Richard Krock). 60% undivided interest in 65 acres of woodland and marsh on northwest cove

Santee Coastal Reserve

Located about 45 miles northeast of Charleston, South Carolina, the 23,024-acre area provides habitat for two endangered species: the southern bald eagle and the American alligator. The preserve, given to the Conservancy by members of the Santee Club, contains over 18,000 acres of salt, brackish and freshwater marshes. The gift includes Blake's (Washo) Reserve, a vast cypress swamp which shelters the oldest known egret rookery in the country. Bald eagles, osprey, anhinga, snowy and American egrets, white ibis and Louisiana herons are among the wildlife inhabiting the reserve. Loggerhead turtles, under pressure from habitat loss worldwide, nest along the 14 miles of Atlantic coast included in the gift. Although the Conservancy has retained ownership of 1,300-acre Washo Reserve, the remainder of the property has been transferred to the State of South Carolina for management as a State wildlife area. The Santee Club's donation is believed to be the most valuable gift ever made to conservation.

of Kezar Lake. Habitat for moose, geese, waterfowl.

SUCKER BROOK WATERSHED, Wilson's Moose Pond Preserve, Oxford Co. Woodland and bog surrounding Moose Pond and a portion of Sucker Brook. 21-acre purchase is second acquisition in proposed assemblage undertaken by Maine Chapter and Kezar Lake Association. Managed by Kezar Lake Association, a Conservancy project committee.

Maryland

SUGARLOAF MOUNTAIN, Chadwick Property, Frederick and Montgomery Cos. 729 acres at base of Sugarloaf Mountain include frontage on Monacacy River, mixed hardwood forest, trout stream. Purchased on behalf of Maryland Department of Natural Resources; will be used as a state park.

Michigan

HOLLOWAY RESERVOIR, Additions, Genesee and Lapeer Cos. 24 separate tracts totaling 408 acres of rolling, wooded land.

NORTH SHORE DUNES, Addition, Ottowa Co. 55 acres include fine representation of dune features and flora. Purchased and managed by the Conservancy's North Shore Dunes Committee.*

PIGEON RIVER PRESERVE, Otsego Co. (Gift of Dr. Sibley Hoobler). Coniferous forest with mixture of hardwoods; some swampy areas. 480-acre tract and adjoining Pigeon River State Forest contain only wild elk herd in eastern U.S. To be transferred to Michigan Department of Natural Resources.

ROBINSON PRESERVE, Addition, Berrien Co. (Gift of Mr. and Mrs. William S. Robinson). 15-acre donation enlarges preserve to 80 acres. Oak-hickory forest, wildflowers. Managed by Andrews University Biology Department.

Minnesota

BURNTSIDE ISLANDS, St. Louis Co. 58 acres. See page 23.

CUTOVER ISLAND, St. Louis Co. 325-acre island in Lake Kabetogama; cover includes spruce, fir, aspen, pine. Purchased in cooperation with National Park Service for eventual inclusion in Voyageurs National Park.

MACDOUGALL HOMESTEAD, Morrison Co. 102 acres include Mississippi River frontage, prairie bluff, floodplain island, mature white pine stand, rookery for great blue herons. Also contains historic homestead. Purchased by Minnesota Chapter with assistance of the Weyerhaeuser Foundation.

MINNESOTA PRAIRIE CHICKEN PRESERVE SYSTEM, Additions. The Minnesota Chapter purchased the following tracts for its system of preserves for the threatened greater prairie chicken. Management of each preserve is handled by the Chapter with the assistance of local prairie experts.

—ANNA GRONSETH PRAIRIE, Additions, Wilkin Co. Wet and mesic prairie, habitat for prairie chickens and other native wildlife. Two tracts totaling 280 acres complete acquisition of 720-acre grassland.*

—PANKRANTZ MEMORIAL PRAIRIE, Addition, Polk Co. 160 acres near booming ground of greater prairie chicken. Prairie preserve now totals 314 acres.*

—TOWN HALL PRAIRIE, Addition, Wilkin Co. 120 acres of mesic to wet prairie; includes active booming ground for prairie chickens. Preserve now totals 160 acres.*

—ZIMMERMAN PRAIRIE, Becker Co. 80-acre tallgrass prairie on glacial till plain, diverse upland and wetland prairie vegetation. Habitat for prairie chicken, plains pocket gopher, sandhill crane, white-tailed deer.*

NORWAY POINT, Itasca Co. White pine and aspen woodland, lowland marsh fronting on Spider Lake; 13 acres. Scheduled for transfer to U.S. Forest Service for inclusion in Chippewa National Forest.

KATHARINE ORDWAY PRESERVE, Addition, Pope Co. 80-acre prairie on glacial morainal hills; excellent array of native prairie grasses and wildflowers. Funds for the purchase provided by Miss Katharine Ordway. Managed by Minnesota Chapter.

WILD RIVER STATE PARK, Chisago Co. Two tracts totaling 160 acres include second-growth woodland, reverting farmland. Purchased on behalf of the state for inclusion in Wild River State Park which fronts on the St. Croix River.

Mississippi

SANDHILL CRANE SANCTUARY, Jackson Co. 1,709 acres. See page 20.

Missouri

CARL TRACT, Lawrence Co. 40 acres of native tallgrass prairie. Habitat for scissor-tailed flycatcher, uncommon in Missouri. Leased to Missouri Department of Conservation for management. Purchased by Missouri Chapter.*

DEVIL'S ICEBOX, Gilbert Tract, Boone Co. Sinkhole plain overlying Devil's Icebox, an extensive limestone cave system. 156 acres acquired on behalf of Missouri Department of Natural Resources for eventual inclusion in Rockbridge Memorial State Park.

KENNON TRACT, Project '76, Cedar Co. 180 acres of native tallgrass prairie provide habitat for prairie chickens, upland plovers. Diverse plant community, limestone spring. Funds for purchase provided by Miss Katharine Ordway. Leased to Missouri Department of Conservation for management.

LICHEN GLADE, Addition, St. Clair Co. Sandstone outcropping forms glade and bluff along Salt Creek; brightly colored lichens on sandstone surfaces, densely wooded floodplain. 13-acre addition brings preserve to 32 acres. Purchased and managed by Missouri Chapter.*

THORESON PRAIRIE II, Cedar Co. 240 acres of prairie chicken habitat with excellent assortment of upland prairie grasses, forbs and legumes. Funds for the purchase provided by Miss Katharine Ordway.

ZAHORSKY WOODS, Crawford Co. (Gift of Mr. and Mrs. Joseph W. Cushing). Heavily wooded frontage on Meramec River includes bluff, scenic ravines, waterfall; 56 acres. Managed by Missouri Chapter.

Montana

BANDY PROPERTY, Missoula and Granite Cos. 1,175 acres traversed by trout stream; Douglas fir and ponderosa pine on higher elevations. Acquired on behalf of U.S. Forest Service for access to Lola National Forest.

Nebraska

WILLA CATHER MEMORIAL PRAIRIE, Webster Co. 610 acres of native tallgrass prairie in heart of "Catherland." Memorial to Willa Cather, whose novels portrayed pioneer life on the Nebraska grasslands. Funds for purchase and management of the tract provided by Woods Charitable Fund, Inc.

New Hampshire

FLAGG PROPERTY, Merrimack Co. (Conservation easement donated by Mr. and Mrs. Frederick P. Flagg). 89-acre woodland on southwest slope of Bald Sunapee Mountain.

THE GREAT ROUNDABOUT, Rockingham Co. (Gift of Paul and Anne Molloy). Cattail and *Spartina* marsh, wooded upland; 3-acre tract fronts on oxbow of Squamscott River.

WHITE MOUNTAIN NATIONAL FOREST, Addition, Carroll Co. 45 acres fronting on Swift River. Purchased on behalf of U.S. Forest Service for addition to White Mountain National Forest.

New Jersey

LITTLE EGG HARBOR, Atlantic Co. 3,855 acres. See page 20.

New Mexico

SEVILLETA PRESERVE, Socorro Co. 220,000 acres. See page 23.

New York

BALTIMORE WOODS, Addition, Onondaga Co. 25 acres include climax forest of beech, maple, hemlock, cherry and ash on steep slopes; small stream. Entire 124-acre preserve to be leased to Save the County, a local conservation group, for management.

CANADAWAY CREEK NATURE SANCTUARY, Addition, Chautauqua Co. 15 acres include

Sandhill Crane Sanctuary

Recognized as the first project in Mississippi's State Heritage Program, the 1,708-acre preserve is habitat for the last known colony of the Mississippi sandhill crane. The species, threatened by extinction largely because of habitat destruction, does not migrate like most other branches of the crane family, but prefers the wet pine and grass savannas of the southern Mississippi coast for its year-round habitat. Identified as a priority area by the U.S. Fish and Wildlife Service, the Sandhill Crane Sanctuary was purchased by the Conservancy with a major portion of the financing provided by Equitable Life Assurance Society of the United States. The land is to be transferred to the Fish & Wildlife Service and protected as a national wildlife refuge.

Little Egg Harbor

Fronting on the Little Egg Harbor estuary, the 3,855-acre property consists of wooded upland, cedar and hardwood swamps, and large areas of tidal marsh. The marsh acts as a spawning and nursery ground for many fish, crustaceans, and other aquatic life. Located directly on the path of the Atlantic Flyway, the area is frequented by many bird species throughout the year. In addition to birds typical of the New Jersey pine barrens and swamps, such species as acadian flycatcher, ruffed grouse, broad wing hawk, yellow-billed cuckoo and hairy woodpecker have been observed. Black duck and several species of heron are common in the marsh area. Funds for the purchase were made available to the Conservancy through a loan provided by the Equitable Life Assurance Society of the United States. The Fish and Wildlife Service, in turn, purchased the area for inclusion in Barnegat National Wildlife Refuge.

frontage on both sides of willow-lined creek. Lies on major flyway; feeding and resting site for migratory birds. Purchased and managed by Western New York Chapter. Preserve now totals 30 acres.

CHESTER M. HARE PROPERTY, Rensselaer Co. (Gift of the estate of Mr. Chester M. Hare). Open fields, white pine-oak woodland; 76 acres. To be transferred to Pittstown Environmental Commission.

CLAY MARSH, Onondaga Co. Two tracts totaling 202 acres within last major cattail marsh in the county. First two acquisitions in a proposed assemblage for the Town of Clay.

DICKENS PRESERVE, Westchester Co. (Gift of Mr. and Mrs. Merwin F. Dickens). 4 acres include red maple stand, marsh vegetation. Transferred to Town of Lewisboro for management by its Conservation Commission.

EVERTON FALLS, Franklin Co. Spruce-pine forest bisected by St. Regis River. 530 acres provide only public access to 9 miles of canoeable waters. To be transferred to New York Department of Environmental Conservation.

GREAT GULLY, Addition, Cayuga Co. 19 acres within heavily wooded, scenic ravine just east of Lake Cayuga. Second purchase in planned assemblage program of Central New York Chapter.*

HOPE GODDARD ISELIN PRESERVE, Addition, Nassau Co. (Gift of Mrs. Mary Dodderidge, Mrs. Ann Payne, and Mr. Sidney Mitchell, Jr.). 42 acres of mixed woodland, open fields. Third in a series of four planned donations. Management coordinated by Long Island Chapter.

LIMESTONE RISE PRESERVE, Albany Co. (Gift of Ms. Jane Bucci). Deep, narrow crevices between blocks of limestone; exposed limestone walls. Vegetation includes mixed woods, variety of ferns and mosses. 32 acres managed by Eastern New York Chapter.

MIANUS RIVER GORGE, Addition, Westchester Co. 4-acre purchase contains oak-beech-maple woodland along scenic river. The Conservancy's oldest active project now totals 338 acres.*

MINERAL SPRING FALLS, Orange Co. 123 acres contain hemlock-lined ravine surrounding Mineral Spring Brook; 50-foot waterfall, scenic rock outcroppings, mixed hardwood forest. Includes 5-acre gift of Mr. George Dunkenberger. Managed by Eastern New York Chapter and Explorers Club of New York.*

PACK DEMONSTRATION FOREST, Hudson River Preserve Addition, Warren Co. (Gift of Niagara Mohawk Company). Terrain ranging from rocky floodplain to thin-soiled ridgetop; Hudson River frontage. 3-acre tract will be transferred to the state for administration by adjacent Pack Demonstration Forest.

PINEY WOODS, Westchester Co. (Gift of Mr. and Mrs. Hobart D. Lewis). 24 acres include stream, cattail marsh, red maple swamp, hardwood forest, fields.

SCALLOP POND, Suffolk Co., Additions:
—RAMOS PRESERVE (Gift of Mr. and Mrs. Paul P. Ramos). 6 acres of salt marsh; feeding and nesting area for clapper rail, osprey, great blue heron, various waterfowl.

—PETER SALM SALT MARSH, Addition, (Gift of Mr. Peter Salm). 22-acre donation brings Conservancy-owned area to 47 acres. Management of entire preserve is responsibility of South Fork-Shelter Island Chapter.

North Carolina

CORE BANKS, Carteret Co. 950 acres of prime ocean beach, dunes, marshes, and high ground along Outer Banks. Three miles of Atlantic ocean-front provide habitat for variety of shorebirds and wintering waterfowl; nesting ground for giant loggerhead turtle. Valued in excess of $3 million, the tract is being transferred to the state which in turn will transfer the property to National Park Service for inclusion in Cape Lookout National Seashore.

ENO RIVER, Additions, Orange and Durham Cos. Three tracts totaling 119 acres include high bluff, mixed hardwood forest, open fields sloping down to the river. Managed by Eno River Committee until future transfer to the state for inclusion in proposed Eno River State Park.

JOCKEY'S RIDGE, Dare Co. Beach and dune vegetation near Jockey's Ridge, the tallest sand dune in eastern United States (140 feet). Two tracts totaling 62 acres were purchased on behalf of North Carolina Department of Natural and Economic Resources for inclusion in Jockey's Ridge State Park.

MOUNTAIN ISLAND LAKE, Mecklenburg Co. 427-acre peninsula surrounded by Mountain Island Lake includes several coves, freshwater marsh, lagoon. Purchased on behalf of Mecklenburg County Parks and Recreation Department using a favorable loan provided by First Union National Bank of North Carolina.

PINKY FALLS, Macon Co. (Gift of Mrs. Jack H. Wilcox, Mrs. Maxwell E. Weaver, and Mrs. Newell Snyder). 6 acres of wooded mountain land with stream and waterfalls. Scheduled for transfer to Botanical Garden Foundation.

ROAN MOUNTAIN, Avery Co. Two tracts totaling 875 acres of wooded mountain land; traversed by the Appalachian Trail. Purchased on behalf of the U.S. Forest Service. (See also Roan Mountain, Tenn.)

Ohio

COPPESS NATURE SANCTUARY, Darke Co. (Gift of Mrs. Frances Russ Carpenter). Oak-beech-hickory woodland, wet meadow and grassland; 33 acres. To be transferred to and managed by Darke County Park District.

IRWIN PRAIRIE, Addition, Lucas Co. 40-acre purchase contains mature swamp forest, wet prairie. Acquired on behalf of the state's Department of Natural Resources. The preserve now totals 142 acres.

KNISS NATURE PARK, Summit Co. (Gift of Mr. and Mrs. Victor D. Kniss). Mature mixed woodland, reverting fields; 73 acres. Conveyed to Akron Metropolitan Park District for use in outdoor education programs.

LITTLE MIAMI RIVER, Addition, Warren Co. 9 acres of floodplain forest with frontage on Little Miami River. To be transferred to Ohio Department of Natural Resources for inclusion in ongoing Little Miami Scenic River Project.

MENTOR MARSH, Addition, Lake Co. (Gift of Morton-Norwich Products, Inc.). Swamp forest, marsh, sand dune vegetation; prime feeding area for migrating birds. 28-acre gift expands preserve, a Natural History Landmark, to 273 acres. Transferred to Cleveland Museum of Natural History.

STAGES POND, Pickaway Co. 123 acres include glacial kettle pond, marsh, thickets, and reverting farmland; refuge for wildlife. Purchased on behalf of Ohio Department of Natural Resources.

WHITACRE ESTATE, Hamilton Co. 17 acres of reverting farmland acquired on behalf of Village of Indian Hill as part of its Greenbelt Program.

THE WILDERNESS (CHARLES A. EULETT PRESERVE), Addition, Adams Co. (Gift of Mr. and Mrs. Stanley Rowe, Jr.). High dolomite ridge with second-growth forest of chestnut oak and shortleaf pine associates; rugged cliffs on north end. To be transferred to Cincinnati Museum of Natural History. 47 acres.

WRIGHT ROAD PONDS, Franklin Co. 66 acres in one of the last undisturbed wetland areas in central Ohio. Rolling hills with ponds, marshes and swamps in lowland areas. Purchased and managed by the Ohio Chapter.*

Oregon

LAWRENCE MEMORIAL GRASSLANDS PRESERVE, Wasco Co. 390 acres of relatively undisturbed rangeland. Biscuit scabland; excellent mix of native grasses, sedges, shrubs. Funds for purchase and management provided by Donald B. and William C. Lawrence, Jr., as a memorial to their parents, William C. and Louise B. Lawrence.

SANDY RIVER GORGE, Addition, Multnomah Co. 158 acres are adjacent to Conservancy-owned preserve. River frontage with mixed second and old growth Douglas fir, cedar, hemlock.*

Pennsylvania

LACAWAC SANCTUARY, Wayne Co. (Gift of Lacawac Sanctuary Foundation). 363-acre preserve features Lake Lacawac—the southernmost unpolluted glacial lake in North America—and most of its watershed. Two ponds, bog, maple-beech-hemlock woodland.

MORRIS EASEMENT, Chester Co. (Conservation easement donated by Mr. and Mrs. Samuel W. Morris). 43 acres along French Creek.

Rhode Island

ELL POND, Addition, Washington Co. Granite promontories on shore of Long Pond; hemlock forest with rhododendron understory. 115-acre tract is within area identified by Rhode Island Natural Areas Survey as high priority for preserva-

Burntside Islands

Two islands (Pine, 13 acres, and Snellman, 45 acres) lie directly across Burntside Lake from naturalist/writer Sigurd Olson's famous Listening Point. Both islands are classic examples of the pine-forested, glaciated, rock-outcrop islands of Minnesota's Superior-Quetico Wilderness canoe country. Pine Island contains a virgin forest of red and white pine, and both islands lie within range of an existing wolf pack which has established a line crossing Burntside Lake. Purchased with funds granted by the Ober Foundation, the islands lie within the authorized boundaries of Superior National Forest and near the Boundary Waters Canoe Area, a unit of the National Wilderness Preservation System.

Sevilleta Preserve

The largest single project in which the Conservancy has been involved, Sevilleta comprises 220,000 acres in central New Mexico. The area, which has been valued as high as $10 to $12 million, was received from the Campbell Family Foundation for a fraction of its value with the assistance of the Mary Flagler Cary Charitable Trust; subsequently the land was transferred to the U.S. Fish and Wildlife Service as America's newest wildlife refuge. Wildlife within the 343 square mile tract of semi-arid land includes puma, bobcat, pronghorn antelope, mule deer, coyote, roadrunner, great horned owl, bald eagle, and the endangered peregrine falcon. The Los Pinos Mountains, rising to 7,200 feet, are virtually within the eastern boundary of Sevilleta, while the extremely rugged Ladron Mountains dominate the northwest corner. Sevilleta is believed to be the largest single segment of land ever acquired for conservation by any private organization.

tion. A project of the Conservancy and Rhode Island Audubon Society.*

South Carolina

SANTEE COASTAL RESERVE, Georgetown and Charleston Cos. 23,777 acres. See page 17.

Tennessee

ROAN MOUNTAIN, Carter Co. 166 acres contain wooded ridges representing the area's subalpine environment. Purchased by Southern Appalachian Highlands Conservancy, a Conservancy project committee.* (See also Roan Mountain, N.C.)

SAVAGE GULF WILDERNESS, Grundy Co. 192 acres within rugged wilderness area. Old-growth stands of shortleaf pine and hardwoods, series of falls and cascades on Savage Creek; numerous unexplored caves. Scheduled for transfer to Tennessee Department of Conservation.

Texas

BIG THICKET BOGS AND PINELAND, Additions, Tyler Co. Two tracts include longleaf pine upland and savannah, several baygalls. 30 acres purchased jointly by Texas Chapter and Big Thicket Association; 8 acres donated by Hazel C. Green.

RED RIVER REFUGE, Grayson Co. (Gift of Rodney A. and Nana R. Rylander), 28-acre tract demonstrates ecological succession from sterile sand luvial island to woodland. Great horned owls, red-headed woodpeckers, and ospreys frequent the area.

Vermont

H. LAURENCE ACHILLES NATURAL AREA, Additions, Chittenden Co. Mature hardwoods and extensive marshes surrounding Shelburne Pond. Purchase of two tracts totaling 185 acres brings preserve to 275 acres. Purchased by Vermont Chapter.*

CHALOUX TRACT, Orange and Caledonia Cos. 3,100 acres include most of watershed for Waits River headwaters, summits of Burnt and Butterfield Mountains. Northern hardwood forest with some hemlock, spruce and fir; abundant wildlife. To be conveyed to and managed by Vermont Agency of Environmental Conservation.

Virginia

E. L. BOYCE ESTATE, Surry Co. 26 acres of marsh and woodland provide buffer for adjacent state-owned property. Transferred to the state's Commission of Game and Inland Fisheries.

BRADLEY PROPERTY, Montgomery Co. (Gift of Mr. William P. Bradley). Steep, rugged ridge with stream, waterfall. Grouse, wild turkey, owls, and hawks frequent the area; nesting site for ravens. Managed by Virginia Polytechnic Institute. 457 acres.

CROOKED CREEK FISHING AREA, Carroll Co. Blue grass pasture fronting on mountain trout stream. Two tracts totaling 129 acres were transferred to Virginia Commission of Game and Inland Fisheries for inclusion in recreational area.

GREAT DISMAL SWAMP, City of Chesapeake and Nansemond Co. (Gift of Union Camp Corporation). Final 60% interest in 49,097 acres of forested swamp. Conveyed to U.S. Fish & Wildlife Service.
—Addition, City of Chesapeake, Va., and Camden and Gates Co., N.C. 14,227 acres contiguous to Union Camp gift and Conservancy-owned lands. Includes cypress swamps, brier thickets, evergreen shrub bogs, and stands of pine, Atlantic white cedar, and red maple; important wildlife habitat. Purchased on behalf of U.S. Fish and Wildlife Service using special funding provided by Aetna Life and Casualty Company.

MASON NECK, Addition, Fairfax Co. Three tracts totaling 74 acres of mixed hardwood forest. Purchased in cooperation with U.S. Fish and Wildlife Service for addition to Mason Neck National Wildlife Refuge.

POWELL TRACT, Prince William Co. 92-acre site of Civil War battle; acquired on behalf of Town of Manassas Park for inclusion in proposed regional park.

VIRGINIA COAST RESERVE, Additions, Accomack Co. 1,822 acres include Sandy Island, Revel Island, and 22 acres on Cedar Island. Salt marsh, forest and sand dunes provide prime habitat for sea and shore birds, as well as a variety of small mammals, crustaceans and insects. Purchased with funds provided by Mary Flagler Cary

Charitable Trust. The Reserve now totals over 33,000 acres.

Washington

CYPRESS ISLAND (FOSS COVE), Skagit Co. 133-acre tract contains coves, tidepools, rocky cliffs and Sitka spruce/western hemlock forests. Bald eagles nest on the property. Widely recognized as island most worthy of preservation in Pacific Northwest. To be transferred to Washington Department of Natural Resources.

PROTECTION ISLAND RHINOCEROS AUKLET COLONY, Jefferson Co. 48 acres purchased to protect nesting colony of rhinoceros auklets from encroaching development. To be conveyed to Washington Department of Game.

ERROLL AND LEOTTA RAWSON GRANT, Addition, Kitsap Co. (Gift of Dr. Erroll and Leotta Rawson). 37 acres contain salt marsh, forested watershed, beach.

WALDRON ISLAND, Addition, San Juan Co. Purchase of 57 acres expands preserve of beaches, marshes, lakes and evergreen and hardwood forests to 273 acres. Haven for seals, otters, bald eagles, numerous shore and sea birds.*

West Virginia

GREENLAND GAP, Grant Co. 255 acres. See page 14.

Wisconsin

BAXTER'S HOLLOW, Ryan Woods Addition, Sauk Co. (Gift of Mrs. Richard Boissard). 40 acres include headwaters of Otter Creek, oak-maple forest. Managed by Wisconsin Chapter. Preserve now totals 329 acres.

RUSH RIVER AND LAKE PEPIN SANCTUARY, Pierce Co. Spawning grounds and nursery areas for northern pike; nesting grounds for mallard, teal, wood duck. Rush River traverses 119-acre tract and flows into Lake Pepin. Scheduled for ultimate transfer to Wisconsin Department of Natural Resources.

SCHMIDT'S MAPLE WOODS, Addition, Clark Co. (Gift of Mrs. Margaret W. Schmidt). 40 acres within one of best known examples of southern mesic forest in west-central Wisconsin. Entire preserve, now totaling 80 acres, is scheduled for transfer to University of Wisconsin-Eau Claire.

WAUBESA WETLANDS, Boegholt Deep Spring Tract, Dane Co. (Gift of Dr. and Mrs. Carl M. Boegholt). 40 acres contain extensive fen, shrub carr and sedge communities, numerous springs. To be conveyed to University of Wisconsin at Madison.

Wyoming

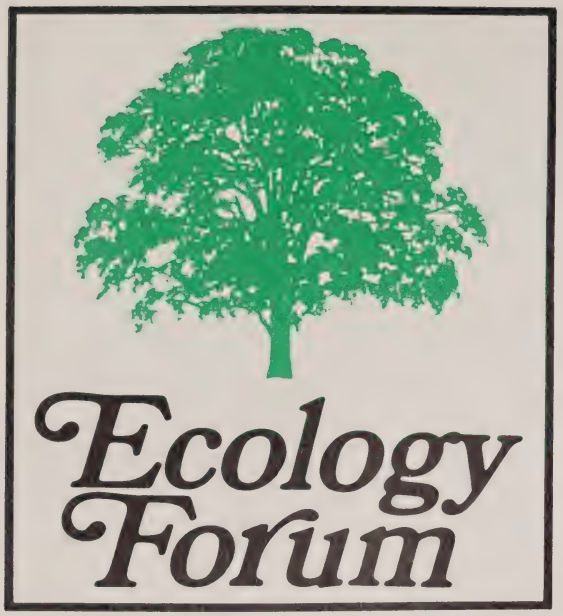
JACKSON ELK REFUGE, Addition, Teton Co. Key 5-acre inholding in National Elk Refuge, which provides winter habitat for elk. To be transferred to U.S. Fish and Wildlife Service.

JACKSON HOLE PLANNING PROJECT (SKYLINE), Teton Co. (Conservation easement donated by Messrs. John Morgan, Harry Baker, Jr., and Peter Jorgensen). 51 acres help support large herds of elk, moose, and Rocky Mountain bighorn sheep.

U.S. Virgin Islands

BATTERY GUT PRESERVE, Parcel #4, St. John (Gift of Messrs. Shailer Bass, Carl Gerstacker, H. D. Doan and C. Benson Branch). 11 acres in deep valley covered with tropical vegetation.

*Fundraising in progress



No. 15
by Robert E. Jenkins

HERITAGE PROGRAMS: INVENTORY PROGRESS REPORT

State Natural Heritage Programs, generally described in Ecology Forum No. 12, have been rapidly evolving in the experimental mode. We now have cooperative arrangements with a number of states. Our first program in South Carolina is nearing the stage of full transfer to the state for process continuation. We are becoming increasingly confident of the rightness of our approach to the inventory and information systems developed for the Heritage program.

A major shortcoming of most past inventories has been the limitation imposed by their site-by-site methodology. Each site, or section of the real landscape, is unique, either in regard to certain unduplicated characteristics or the combination and spatial distribution of its habitats, species and other components. Thus, attempts to directly compare sites inherently partake of an attempt to compare unlike entities, not only "apples to oranges," but whole "fruitbaskets."

In an attempt to resolve the problem, many inventory projects have relied on less than satisfactory quantitative evaluation systems. Frequently, the result has been to submerge consideration of natural diversity while allowing broadly applicable measures such as degree of disturbance, size or even "prettiness" to assume overwhelming importance. This often leads to the gully and hemlock syndrome, in which habitat types or elements are preserved redundantly while others are not preserved at all. Limited examples of ecosystems, landscape types or elements which are well represented in areas retaining a high degree of naturalness become frequent objects of preservation efforts. Conversely, types which remain as only a few damaged remnants are passed over. It might seem absurd that the last, best examples of ecosystems close to extinction could be rejected as "not good enough" for preservation, but this is exactly what can happen.

To correct this, the Conservancy's Heritage Programs are focusing first on the elements of natural diversity themselves. By developing a classification of element types, including vegetation associations, aquatic habitats, endangered or otherwise significant species, we establish an extensive list of preservation objectives. The list can be expanded by addition or subdivision of elements or by incorporating whole new classes of elements. Then, by dividing the nominated natural area sites into their components, it is possible to create element files. Within the element files we can collect and compare reported occurrences of a particular type (e.g. oak-hickory forest or long-toed salamander habitat).

The element file structure provides an index of ambient rarity by showing which elements have few or no reported occurrences. The index becomes more accurate as the system gains data. The files promote efficient data accumulation since the compilation of similar types assists specialists in concentrating and targeting their field survey activities. Most importantly, direct comparisons can be made on the basis of real data (as opposed to subjective judgment). The comparison of element files gives us an opportunity to look at selected aspects of the total area and to examine the occurrence of a single element. The questions of relative significance and criticality can then be rigorously addressed.

However, site specific questions referred to before are also important. In judging the qualities of an ensemble—a number of co-located elements—a chronic difficulty has been to set boundary lines to delineate exactly what a "site" is. In setting out to survey or preserve an endangered bog-inhabiting plant, for example, one concludes that its preservation will depend on the protection of its habitat, the bog itself. The bog, in turn, is found to be a part of a pond system, whose integrity depends upon the protection of its shoreline and the quality of its tributaries. Survey or protection of the tributaries involves the adequate protection of the entire watershed. The shoreline is found to con-

tain a good example of a particular forest-type. The forest stand, in turn, is inhabited by certain animal species. The species has large home range and depends upon the maintenance of a minimum breeding population with even larger range requirements. Collectively, the bog, the ponds, the forests, the wildlife are all linked to other natural elements which are part of still larger systems. Thus, by attempting to trace the limits of a ecological boundary, we see that the environment of the original target element can encompass the entire world.

Establishing boundaries and delineating sites are complex tasks. It is necessary to make some trade-offs. The legal boundaries of already protected sites provide a set of useful conventions. By compiling information on the natural elements contained on the sites and cross-referencing to the element files, we can analyze how thoroughly element types are represented within the current system of protected land.

The same legal boundary approach is also useful in establishing perimeters for prospective preserves. The lines may be drawn to collect a diversity of elements and to arrange for optimum viability, defensibility, manageability, interdependency, and utility of the various components. Remaining element occurrences, not readily assignable to particular sites, are plotted on base maps. From the base maps we can identify collections of high priority elements to define desirable ensembles. The more information contained in the plotting data, the more quickly we can see the ecological circumstances under which these ensembles exist. Photography, photo maps, or remote imagery provide particularly relevant data. The quality of ensembles can then be evaluated by determining the diversity and the relative quality of elements located within proximity to one another.

We feel that keying the inventory process to elements of natural diversity is the best approach so far advanced for identifying preservation priorities. We also believe that as the process continues and the Heritage data systems become more complete, the system increasingly will be turned to other uses.

The comparative methodology which will help to identify and document the relative critical importance of various natural lands will be of great utility to land use planners. By mapping the collected data, we will provide a great deal of factual information which can be used in remote sensing research to find signatures—unique patterns—for particular ecological elements. The remote sensing data will help us gain a more comprehensive appreciation of the ecological conditions of the total landscape. The techniques will also provide a useful means for identifying additional natural elements.

Yet another application will be in the field of environmental impact assessment, which has long been hindered by a lack of state, regional or national perspective. It is impossible to judge the criticality or significance of any individual site (or alterations to that site) by reference to the site alone. However, by collecting standardized Heritage system data in the process of environmental impact surveys, it will be possible to use the Heritage information system to provide the perspective necessary for estimating relative significance.

The various uses and benefits will not come about without large scale and continuous efforts of the sort being launched in the Heritage Programs. Developing meaningful classifications systems, generating lists of occurrences, and especially, conducting the field surveys which are vital to this process, will only be accomplished with the enthusiastic support and volunteer efforts of ecologists, natural scientists, agencies and organizations, and the public at large. Conservation programs have traditionally called on help from many sources. This time, we are trying to create a system and a condition that will give lasting meaning to the effort and, we hope, greater promise for solid, long range results.

The Nature Conservancy Preserve Directory

The Nature Conservancy's PRESERVE DIRECTORY

Your key to over 700,000 acres of protected natural land

An indispensable source book for everyone concerned about our precious natural heritage. Features valuable facts about over 1200 Conservancy projects, including location, acreage, prominent natural features, and up-to-date information sources for hikers, educators, and naturalists. A special section highlights eight preserves you and your family will enjoy. Also features fold-out map and complete directory of TNC offices and chapters. Over 150 fact-filled pages.

To order your copy, send $3.00 ($5.00 for non-members) to:

The Nature Conservancy, Dept. PD, 1800 N. Kent St., Arlington, Virginia 22209

OAK LEAF AWARDS 1974

The Nature Conservancy acknowledges the outstanding efforts of its members and volunteers through the presentation of the Oak Leaf Award. This award, symbolized by a green and gold lapel pin, is given in recognition of especially dedicated service and support toward achieving the Conservancy's objectives. Recipients for 1974 are:

Mrs. Marion Becker, active in the Ohio Chapter since its beginning, is a conservationist and writer. In addition to her involvement in the Conservancy's activities, she is secretary and trustee of the Cincinnati Nature Center, and is working on a Little Miami River corridor plan.

Mr. Michael Castagna has been a vital force in the Conservancy's efforts to preserve the Virginia Barrier islands, from the first negotiations to the present day management study. For his continuing concern for the preservation of these fragile islands and in recognition of his many hours of volunteer service, Mr. Castagna is awarded the Conservancy's Oak Leaf.

Dr. William H. Elder, former chairman of the Missouri Chapter, has had an outstanding career as chairman of the Zoology Department at the University of Missouri-Columbia. In addition to being named Missouri Conservation Educator of the Year, Dr. Elder is presently guiding an inventory of Missouri's natural areas.

Mr. Edward C. Fritz, a leader in and former president of the Texas Chapter, is recognized for his over quarter century of efforts on behalf of environmental affairs. Largely responsible for the acquisition of the Conservancy's Texas preserves, he continues to play a vital role in Texas as Chairman, State Committee on Natural Resources; and Administrator, Natural Areas Survey.

Mr. Thomas A. Gaines is a former chairman and current trustee of the Connecticut Chapter. Under his leadership, in addition to project and management activity, the Chapter created a priority list of key Connecticut natural areas and worked to develop a positive relationship with other conservation organizations in Connecticut.

Mr. Pieter P. Hondius, trustee and projects chairman of the Colorado Chapter, is recognized for his diligent efforts on behalf of the Conservancy's Colorado land conservation program. His great familiarity with mountain lands has helped establish needed acquisition priorities within the state.

Mr. Thomas McAllister receives his award in recognition of his continuing efforts in the field of conservation both as the Outdoor Editor for the Oregon Journal, and as chairman of the Sandy River

Gorge Management Committee. He consistently puts his beliefs into action, demonstrating with the preserve the need to honor the land.

Mrs. Jane Pinheiro, board member and officer of the Southern California Chapter, played a leading role in the establishment of a number of California parks, including the L. A. Wildflower and Wildlife Sanctuaries. A noted wildflower artist, Mrs. Pinheiro continues to use her talents, her political acumen and her endless energy to the benefit of California conservation.

Prof. R. William Poulter has been an active member, a former trustee and chairman of the Iowa Chapter. A recently retired professor of botany, Professor Poulter initiated a statewide survey of unpreserved natural areas, was directly responsible for acquisition of half of the Iowa Chapter's preserves and is preparing a management plan for state-owned preserves.

Mr. Dennis Puleston, outstanding naturalist and former trustee of the Long Island Chapter, is a member of its Technical Advisory Committee. In addition to his volunteer efforts on behalf of the Conservancy, as an artist, nature guide and lecturer, Mr. Puleston was an original founder of the Environmental Defense Fund.

Dr. Erroll W. Rawson, a Washington State conservationist, is awarded the Oak Leaf in recognition of his lifelong concern for the preservation of lands within the state. Since donating the Rawson Grant to the Conservancy, he has helped implement scientific and educational uses of the land and has worked to enlarge the original sanctuary.

Dr. Glen Sanderson receives his award for his efforts to preserve the Illinois prairie grouse. From the onset of the project in 1965, Dr. Sanderson has been involved in expanding the program to its present fourteen sanctuaries and has implemented a complete management system which reversed the Illinois prairie grouse's decline.

Mr. Daniel Smiley, a former member of the Conservancy Board and a past officer and trustee of the Eastern New York Chapter, and **Virginia Viney Smiley,** also a past Chapter trustee, receive the Oak Leaf in appreciative recognition of their dedicated and real efforts on behalf of conservation. The life of the late Mrs. Smiley, an admired author and naturalist, and that of her husband, exemplify a personal commitment to the land, to its preservation and to the future.

Mr. Paul W. Thompson, the Conservancy's volunteer representative in Michigan for many years, has helped make the Conservancy's activities successful in the Wolverine State. His knowledge of natural areas and his willingness to contact potential land donors have done much to further the Conservancy's objectives.

Mr. James Todd, Jr. receives his award in recognition of his over 20 year dedication to the preservation of the Mianus River Gorge, the Conservancy's first project. A founder of the Mianus River Gorge Committee and a donor of land along the Gorge, Mr. Todd has continuously worked to ensure the land's protection as a natural area.

Mrs. Margaret Watrous is a dedicated, active Wisconsin Chapter volunteer. Her personal touch as membership secretary has contributed to the steady growth of the Chapter. As secretary of the Wisconsin Natural Beauty Council, and as a volunteer for Senator Gaylord Nelson, Peg Watrous has also been involved with environmental matters at the state and national levels.

MEMBERSHIP DRIVE LAUNCHED!

2,000 New Members by July 4th

The challenge is to increase Conservancy membership by 2,000 by Independence Day 1975. Conservancy members all over the country are being asked to join in meeting the exciting goal.

Over the last 2½ decades, The Nature Conservancy has been successful in preserving significant land, safeguarding it from those who would exploit and misuse it. In some ways we have helped to shape the environmental future of America. Although the Conservancy's efforts and success have grown over the years, our actual membership has stayed about the same since 1970. That so much could be accomplished is a testament to the present Conservancy members; but, without a substantial number of new members, the Conservancy program will eventually begin to suffer. We have to grow if we want to be a vital and effective organization that can accomplish what needs to be done in land conservation for the second half of the 1970's.

After consulting with all chapters, it was decided that we could meet our goal of 2,000 new members by July 4th if each chapter would try to increase its own membership by 15%. This means, for example, that Northern California, with 2,204 members, is seeking to find 330 new members. Monterey Bay, on the other hand, with 232 members, is looking for 35 new people.

Each chapter has its own goal, and within each chapter no one member will be responsible for bringing in more than one, two, or at the most, three new members during the campaign.

Your friends and neighbors may well want to become Conservancy members. Chances are they are as interested in preserving our nation's natural lands as you are. If they aren't, isn't it time they became concerned?

Your chapter is forming a coordinating committee to organize the drive in your area. Remember—our goal is to grow by 2,000 new members by the 4th of July. We thank you for lending a hand. Your efforts will make a difference—not only to The Nature Conservancy, but to the future of land and the wildlife it shelters.

DR. PATRICK HONORED

Dr. Ruth Patrick, noted limnologist and member of the Conservancy's Board of Governors, has received the John and Alice Tyler Ecology Prize, the world's largest prize for scientific achievement. The $150,000 award is given annually to the person who has done the most to improve the environment.

Dr. Patrick is chairman of the board of the Academy of Natural Sciences in Philadelphia. She is best known for her work in algae and has become a moderator between industry and the public on water pollution. In addition, she played a key role in shaping the U.S.'s clean water act.

The Tyler Prize, established in 1973, is administered by California's Pepperdine University.

DR. ODUM RECEIVES AWARD

Newly elected Conservancy board member Dr. Eugene Odum has received an internationally coveted award from the Institute of Life in Paris, France. The annual award, which carries with it a $62,000 cash prize, was presented to Dr. Odum and his brother, Howard, for their pioneering work in ecology.

The nation's foremost ecologist, Dr. Odum wrote *Fundamentals of Ecology* which has been translated into many languages and is used as the standard textbook in ecology. Dr. Odum is now director of the Institute of Ecology, University of Georgia, and a senior fellow of the National Science Foundation.

ANNUAL REPORT 1974

The Nature Conservancy's Annual Report covering the fiscal period from January 1 to December 31, 1974, is now available on request. Write to Ms. Sue Dodge, Director of Publications, at the National Office.

IMPORTANT REMINDER

Effective July 1, 1975, life membership dues will increase to $500, and the $300 and $1,000 membership categories will be eliminated. Until that date, a bargain opportunity exists for members and friends who desire a lifetime affiliation with The Nature Conservancy.

PHOTOGRAPHS: Charles H. Baer, p. 14; The Bettmann Archive, pp. 6, 7; Susan Bournique, p. 23; Michael P. Gadomski, p. 12; Robert Jenkins, pp. 8 (upper right), 11 (right); Tim Loomis, inside back cover; Leland Payton, p. 4; James Q. Reber, p. 20; R. Michael Wright, p. 9.

The Nature Conservancy believes the time for mindless destruction is past. We must be responsible to the land and the delicate balance it harbors.

We must act now. We need your help.

Please contribute to the General Fund.

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